S. W. BONSALL.

ROTARY DRIER.

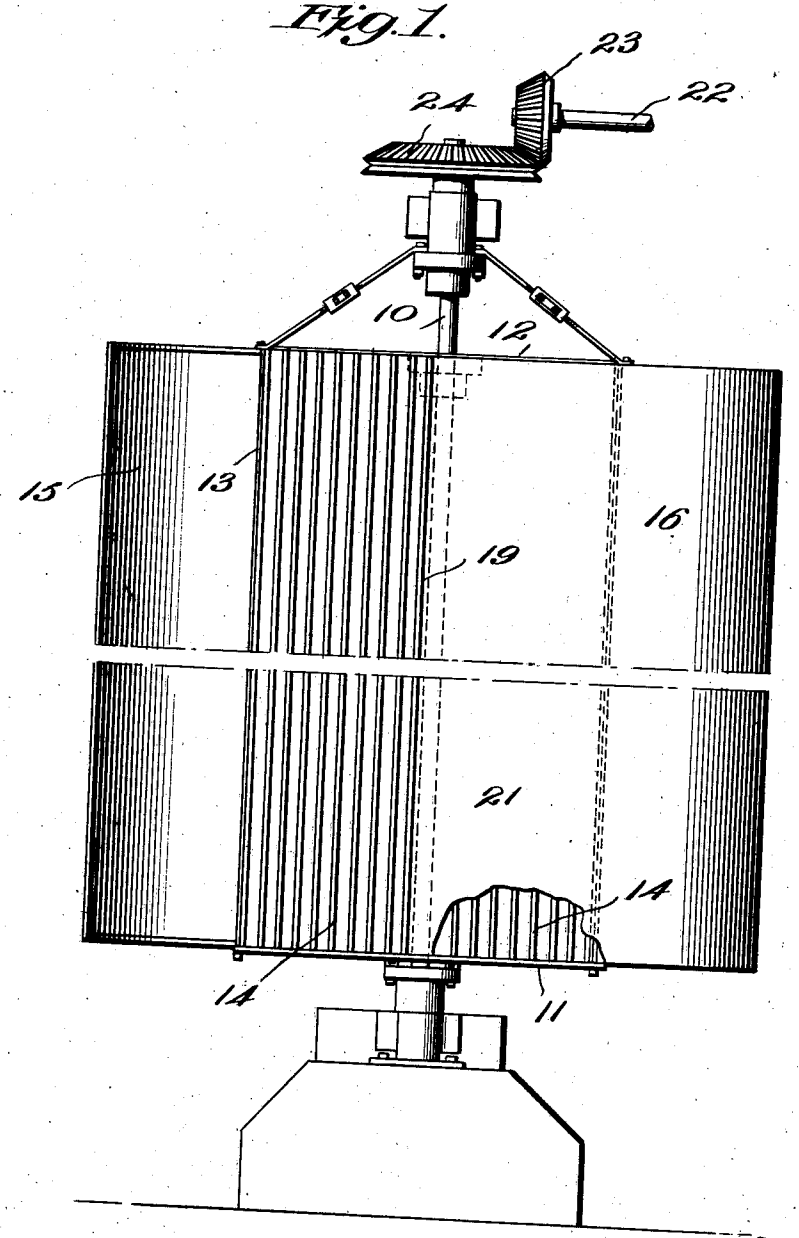
APPLICATION FILED MAR. 19, 1912.

1,047,734.

Patented Dec. 17, 1912.

2 SHEETS—SHEET 1.

Fig. 1.




WITNESSES

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2 SHEETS—SHEET 2.

Fig. 2.

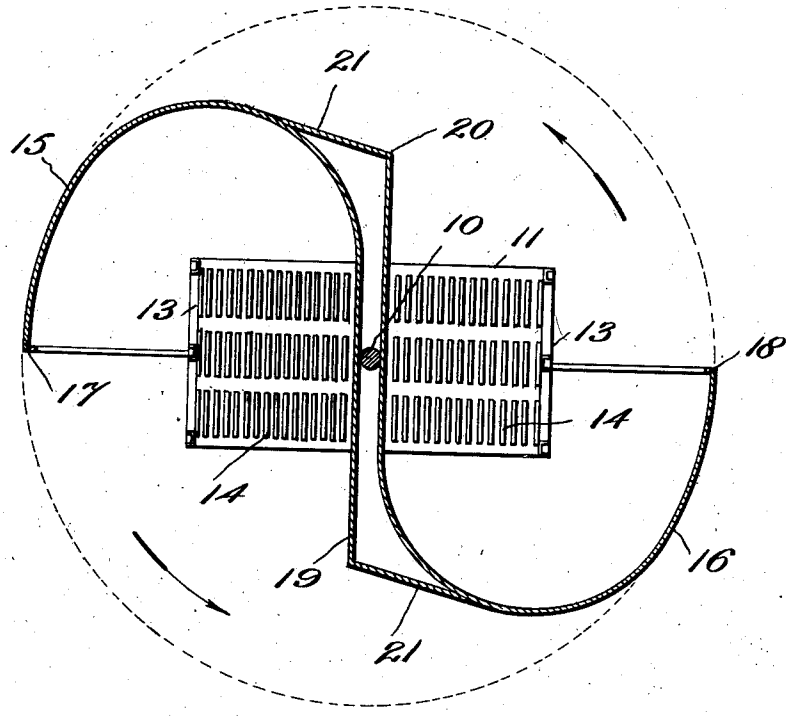
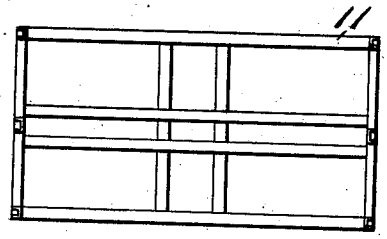



Fig. 3.

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# UNITED STATES PATENT OFFICE.

SEYMOUR W. BONSALL, OF NEW YORK, N. Y.

## ROTARY DRIER.

1,047,734. Specification of Letters Patent. Patented Dec. 17, 1912.

Application filed March 19, 1912. Serial No. 684,905.

*To all whom it may concern:*

Be it known that I, SEYMOUR W. BONSALL, a citizen of the United States, residing at borough of Manhattan, in the city of New York and State of New York, have invented certain new and useful Improvements in Rotary Driers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The present invention relates to a simple self-contained machine, capable of operation from any line of shafting or by a direct acting motor, by use of which any material with which the machine is charged may be rapidly and efficiently dried. This apparatus is particularly useful for the drying of lumber, which is accomplished with a great rapidity, while at the same time avoiding the disadvantages ordinarily incident to quick drying.

While I have shown the device herein as applied to drying lumber, it is to be understood that my invention is not limited to this purpose.

Broadly speaking the invention may be defined as comprising a substantially balanced container mounted upon and situated close to a central supporting shaft and provided with a current reversing intake scoop preferably combined with an auxiliary exhausting plane situated at the outlet side of the container.

The invention, in its less broad aspects, comprises certain details of construction hereinafter pointed out and claimed.

It is a very important feature of my preferred invention that it provides means involving practically no loss of power whereby the material to be dried is subjected to a compressed air current, preferably at ordinary temperatures, of such high density and speed as to carry off moisture, not only by simple evaporation from the surface, but also by an exhausting effect exerted at the external orifices of the moisture-containing capillaries or pores of a nature familiar in machines for exhausting electric lamp bulbs and in other connections.

In its preferred form the apparatus comprises a container open at all times upon one side, whereby cars or other receptacles containing the material to be dried may be readily loaded onto the machine, thereby avoiding all accessory moving parts, such as doors and the like.

The invention is illustrated in a preferred form in the accompanying drawings, wherein—

Figure 1 is a side elevation, Fig. 2 is a central horizontal section, and Fig. 3 is a plan view of the platform at top and bottom of the container.

The container extends an equal distance on two sides of the central supporting shaft 10, and comprises a floor 11 and a top 12 joined by external sheathing 13. Within this container the material to be dried is suitably disposed, and in the case of boards, as shown at 14 in the drawing, these are placed with their edges to the air current to be produced as hereinafter described. Suitable fastenings may be provided, but these form no part of my present invention and are not particularly illustrated.

On each side of the shaft 10 is mounted a curved sheathing or intake scoop 15, 16, these being preferably arranged with their outer edges 17, 18, outside of the continuations of the side lines 13 of the containers, and being curved as shown so as to divert air entering past said outer edges and force it into that side of each container which is retreating when the entire device revolves in the direction of the arrows in Fig. 2. I prefer to shape these intake scoops as shown, so that their outer edges lie in the prolongation of a line through the middle of their respective containers and at a distance beyond the sheathings 13 equal to the diametral width of said containers. As shown these scoops embrace an angle of 180 degrees and are preferably nearly semi-circular in cross section, while their outermost portions conform for a short distance to the dotted circle in Fig. 2, which indicates the path of movement of the outer edges 17, 18.

For the easier construction and better operation of my device, the intake scoops are combined with exhausting planes 19, 20, which are preferably constructed as continuations of the scoops 15 and 16, respectively. As the entire apparatus is revolved upon the shaft 10, these planes rapidly retreat from the space immediately in front of the exit sides of the containers, and produce a rarefaction of the atmosphere within that

space which aids in producing air currents through the containers. The outer air which would otherwise rush in to fill the area of rarefaction so caused is caught by the advancing intake scoop, and utilized within the containers. I have found that it is best to carry the planes 19 out to the circumference of the circle described by the outer corner of the platform. To prevent loss of power and useless diversion of air, I prefer to inclose the space between the two combined scoops and exhaust planes by carrying inclosing walls 21, from the external edges of the planes 19 and 20 to the back of the opposite scoops.

The shaft 10, and the entire machine with it, may be revolved at a suitable rate of speed by any desired prime mover, as for instance by the shaft 22, connected with the vertical shaft 10 by miter gears 23, 24. As the machine revolves, the intake scoops catch the air and force it into the retreating sides of the containers. Here the air passages left by the material in the containers present an aggregate area far smaller than that of the intake passage, and at the same time the speed of retreat of each container is less than the speed of advance of the scoops. Under these conditions there is produced in each container a current of compressed air of high velocity, whose movement is aided by the partial vacuum produced at the exit side of the container. The effect of this rapid rush of compressed air in intimate contact with the boards or other material is extremely efficient, acting by powerful induction to force the moisture outward from the interior of the material, and making this drier very useful even where damp air is used.

I have found that planks an inch thick, having been boiled in a vat for seven hours have been perfectly dried in an hour and a quarter, on a damp day at sea level, with a circumferential velocity of the machine of about fifty-five miles an hour. By drying wood, particularly, by this system, the deterioration by checking, etc., observed in much kiln dried wood is avoided and I obtain all the advantages of wood slowly and carefully seasoned under the most favorable circumstances.

Various changes may be made in the arrangement and construction of this device without departing from the scope of my invention, and I do not limit myself to the details herein shown and described.

What I claim is—

1. A drier comprising a rotatably mounted container and an intake scoop extending from the retreating opening of said container and bending around the same in a forward direction so as to present an advancing opening when the container is revolved, substantially as described.

2. A drier comprising a shaft, two oppositely placed containers carried thereby, and an intake scoop extending from the retreating opening of each container and bending around the same in opposed forward directions so that each presents an advancing opening when the containers are revolved, substantially as described.

3. A drier comprising a shaft, a platform having a side wall next the shaft and a side wall on the side opposite said first named wall forming a container open on both sides; in combination with an intake scoop arranged to deliver the air which it gathers into the receding side of said container, substantially as described.

4. A drier comprising a shaft, a platform having a side wall next the shaft and a side wall on the side opposite said first named wall forming a container open on both sides; said wall next to the shaft being extended and curved around said container to form an intake scoop having an advancing edge outside of and beyond the outer wall of said container, substantially as described.

5. A drier comprising a rotatably mounted container, an exhausting plane projecting from the advancing opening thereof and an intake scoop arranged to gather air and deliver it into the retreating opening of said container, substantially as described.

6. A drier comprising a shaft, a container carried on one side thereof and a side wall for said carrier next the shaft, said wall curving away from the retreating side of the container and bending forward to present an advancing opening when the shaft and container are revolved, substantially as described.

7. A drier comprising a shaft, a container carried on one side thereof so that its outer corners will describe a circle when the shaft is revolved and a side wall for the container next the shaft, said wall curving away from the retreating side of the container and bending around so that its advancing edge is outside of said container and located on the circumference of a larger circle than described, by the corners of the container, substantially as described.

8. A drier comprising a shaft, a container carried on one side thereof and a side wall for said carrier next the shaft, said wall curving away from the retreating side of the container and bending around to form an intake scoop with an advancing edge, and the opposite end of said wall being extended to form an exhausting plane at the advancing opening of the container, substantially as described.

9. A drier comprising a shaft, a container on each side thereof, a wall on the shaft side of each container, said walls being extended in opposite directions in curved portions

forming intake scoops for gathering air into the retreating openings of the two containers, substantially as described.

10. A drier comprising a rotatable container and an intake scoop arranged to deliver air into the retreating opening thereof, substantially as described.

11. A drier comprising a rotatable container, an intake scoop arranged to deliver air into the retreating opening thereof, and an exhausting plane at the side of the advancing opening thereof, substantially as described.

12. A drier comprising a shaft, a wall curving outward from near the shaft to form a scoop for diverting the air into a space near the shaft and means within said space near the shaft for confining the current of air and materially reducing the cross section of the passage open to it, whereby the air is compressed and its velocity is increased, substantially as described.

In testimony whereof, I affix my signature, in presence of two witnesses.

SEYMOUR W. BONSALL.

Witnesses:
O. K. HOFFMAN,
H. GREIFF.